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PROCESS FOR OBTAINING POLYPHENOL EXTRACTS FROM COCOA  
BEANS, EXTRACTS OBTAINED AND USES THEREOF

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The present invention relates to a process for obtaining extracts based on polyphenol compounds from cocoa beans, to the extracts obtained and to uses thereof.

10

It is known that fresh cocoa seeds contain about 40% water, 30 to 35% lipids, 4 to 6% polyphenols or polyphenol derivatives, and 1.5% xanthines, the remainder consisting essentially of proteins, starch, cellulose and sugars. In this respect, reference may be made especially to the following articles:

15

- "Cacao procyanidins: major flavanoids and identification of some minor metabolites" from L.J. Porter, Z. Ma and B.G. Chan, published in Phytochemistry vol. 35, No. 5, pp. 1657-1663, 1991 and

20

- Epicatechin content in fermented and unfermented cocoa beans" from H. Kim and P.G. Keeney, published in Journal of Food Science - vol. 49 (1984) pp. 1090-1092.

25

It will be noted that the term "polyphenol" as used in the description and the claims denotes polyphenols that are unsubstituted, and substituted especially in the form of glycosides. These polyphenols

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belong in particular to the class of anthocyanins, flavonoids and flavanols and oligomers thereof, of types A and/or B.

Similarly, it will be noted that the terms  
5 "lipid" and "fatty substance" represent free fatty acids, sterols, in particular phytosterols, and mono-, di- and triglycerides.

The term "pretreatment" means fermentation and/or drying and/or cleaning.

10 It is known that cocoa originates from South America and that its fruit or pods are collected, and the beans undergo a pretreatment which consists in fermenting them for five to six days, before being dried. During this fermentation, a certain number of  
15 biochemical reactions take place, reflected especially by the destruction of pathogenic microorganisms, the formation of flavour precursors and a partial degradation of the polyphenols as a result of an enzymatic oxidation or tanning of the proteins. It is  
20 considered that 70 to 80% of the polyphenols are degraded during the fermentation.

Polyphenols are antioxidant and free-radical-scavenging natural substances that are the most powerful known. Polyphenol extracts and preparations  
25 containing them are conventionally used in the following indications: circulatory disorders, veno-lymphatic insufficiency, cutaneous capillary fragility,

circulatory disorders of the retina, haemorrhoidal  
episodes, solar erythema or radiation-induced erythema  
(prevention of damage caused by radiotherapy),  
hypertension, hypercholesterolaemia, various viral and  
5 microbial complaints.

In recent years, many publications have  
revealed at the molecular level the modes of action by  
which they are capable of combating major complaints,  
namely:

10 cardiovascular diseases:

- Platelet aggregation inhibitors (Petroni, A.,  
M. Blasevich, M. Salami, N. Papini, G.F. Montedoro  
and C. Galli, *Inhibition of platelet aggregation  
and eicosanoid production by phenolic components  
15 of olive oil*. Thromb. Res, 1995, 78(2): pp. 151-  
160)
- Anti-inflammatory agents and LDL-cholesterol  
oxidation inhibitors (Frankel, E., J. Kanner,  
J. German, E. Parks and J. Kinsella, *Inhibition of  
20 oxidation of human low-density lipoprotein by  
phenolic substances in red wine*. Lancet, 1993.  
341(8843): pp. 454-457)
- Eicosanoid oxidation inhibitors (Pace-  
Asciak, C.R., S. Hahn, E.P. Diamandis, G. Soleas  
25 and D.M. Goldberg, *The red wine phenolics  
transresveratrol and quercetin block human  
platelet aggregation and eicosanoid synthesis:*

implications for protection against coronary heart disease. *Clin Chim Acta*, 1995, **235**(2): pp. 207-219)

- 5       - Anti-atherosclerosis agents (Yamakoshi, J.,  
S. Kataoka, T. Koga and T. Ariga,  
*Proanthocyanidin-rich extract from grape seeds*  
*attenuates the development of aortic*  
*atherosclerosis in cholesterol-fed rabbits.*  
*Atherosclerosis*, 1999. **142**(1): pp. 139-149)
- 10       - Anti-thrombotic agents (Fuhrman, B., A. Lavy and  
M. Aviram, *Consumption of red wine with meals*  
*reduces the susceptibility of human plasma and*  
*low-density lipoprotein to lipid peroxidation.* *Am*  
*J Clin Nutr*, 1995. **61**(3): pp. 549-554)
- 15       Alzheimer's disease (Orgogozo, J.M.,  
J.F. Dartigues, S. Lafont, L. Letenneur,  
D. Commenges, R. Salamon, S. Renaud and  
M. Breteler, *Wine consumption and dementia in the*  
*elderly: A prospective community study in the*  
20       *Bordeaux area.* *Rev Neurol*, 1997. **153**(3): pp. 185-  
192)
- 25       Cancer (Jang, M.S., E.N. Cai, G.O. Udeani,  
K.V. Slowing, C.F. Thomas, C.W.W. Beecher,  
H.H.S. Fong, N.R. Farnsworth, A.D. Kinghorn,  
R.G. Mehta, R.C. Moon and J.M. Pezzuto, *Cancer*  
*chemopreventive activity of resveratrol, a natural*

product derived from grapes. Science, 1997.  
275(5297): pp. 218-220)

Given the fact that cocoa contains polyphenols and the importance of the use of polyphenols in the medical field, the inventors were led to attempt to extract from cocoa the polyphenol compounds it contains, especially with the aim of producing dietetic foods and beverages containing this antioxidant. A pretreatment comprising a fermentation followed by a drying operation constitutes a major drawback in the sense that it is harmful to the yield for extracting the polyphenols contained in cocoa.

In seeking to overcome these drawbacks, the inventors have discovered that by using beans that have not been pretreated and by performing the extraction under defined conditions, extracts of novel compositions having properties of great interest may be obtained.

The aim of the invention is thus to provide a process for extracting cocoa beans to obtain extracts with a high polyphenol content that are enriched (relative to the initial contents in the beans) in certain lipid derivatives of interest. The invention is also directed towards providing such extracts as novel products.

The invention is also directed towards exploiting the properties of the extracts in various

applications, especially in the food, cosmetic and therapeutic fields.

The process according to the invention, for obtaining extracts based on polyphenol compounds from  
5 cocoa beans, is characterized in that it comprises

- the use of fresh beans, that have not been pretreated or defatted, these beans being freed of their pulp and husk, so as to obtain clean kernels,

- the crushing of the said kernels, in the  
10 presence of solvent,

- the maceration of the crushed kernels under conditions allowing the desired compounds to be extracted,

- the filtration of the maceration mixture,
- 15 - the recovery of an extract containing the said compounds from the filtrate.

The beans used may or not be pretreated.

According to one variant of the present invention, merchant cocoa beans are used, that is to  
20 say beans that have undergone a pretreatment comprising drying, the seeds of which are re-humidified before crushing, for example with 30 to 50% warm water.

The maceration step is performed using water or a mixture of water and several solvents, capable of  
25 dissolving the polyphenols and lipids, without adversely affecting their properties, such as ethanol,

acetone, 2-butanol or 2-propanol. Preferably, the solvent content is greater than 50% by volume.

The process is advantageously performed at a temperature from about 20 to 50°C, for 1 hour to  
5 several days.

As shown in the examples, a maceration of only 1 hour with a solvent such as 70° ethanol gives extracts of high quality, which is of great interest for the industrial applications of the process.

10 The mixture obtained is then filtered and the filtrate is treated to recover the desired extract.

Advantageously, the filtercake is first subjected to one or more washing steps. The same solvent as that used in the maceration step is used in  
15 particular.

The recovery of the extract based on polyphenol compounds consists in particular of a distillation, carried out so as to evaporate the solvent and to obtain an extract.

20 The extracts obtained have the advantage of having a high content of polyphenol compounds and an enrichment, relative to the starting bean composition, in phytosterols, especially in  $\beta$ -sitosterol.

Such extracts constitute novel products and,  
25 in this respect, also fall within the field of the invention.

The invention is directed in particular towards extracts characterized by a content (% by weight relative to the total extract) of from 15% to 65% polyphenols, from 0 to 11% lipids and from 0 to 20% xanthines.

The invention is directed in particular towards extracts in which the lipids comprise from 10 to 30% by weight of phytosterols with, preferably, 7 to 15%  $\beta$ -sitosterol. This preferential content is achieved when the process according to the invention is carried out on fresh beans.

Such novel extracts advantageously constitute a characteristic feature of the process of the invention.

The demonstrated properties of polyphenols have already been mentioned at the start of the description. Similarly, phytosterols constitute products of great interest.

Oxidized phytosterols are plant nutrients whose nutritional qualities in public health are particularly well documented. Many scientific studies have demonstrated the role, in particular, of  $\beta$ -sitosterol in the protection and prevention against certain diseases.

These qualities may thus be summarized:

- a stimulating effect on the immune system by increasing the immunological defences against viral



and bacterial infections (Bouic, P.J.D. et al.  
International Journal of Immunopharmacology, vol. 18,  
No. 12, pp. 693-700, Dec. 1996),

- a hypocholesteremia effect in man  
5 without changing the diet or modifying the physical  
activity (Métab. Clin. Exper., vol. 38, pp. 136-40  
(1989); American J. Clin. Nutr., vol. 59, pp. 1325-31  
(1994)),

- combating stress-related disorders  
10 (immunosuppression, pain and neuralgia, etc.),  
P.J.D. Bouic et al.: International Journal of Sports  
Medicine, 1999,

- combating prostate complaints,  
Klippel K. F. et al.: British Journal of Urology, v.  
15 80(3), pp. 427-432, Sept. 1997,

- combating prostate cancer and breast  
cancer,

- combating certain auto-immune diseases such  
as lupus, psoriasis, chronic fatigue syndrome and  
20 rheumatoid arthritis (P.J.D. Bouic: Newsletter of the  
Arthritis Trust of America, Summer 1998),

- maintaining a certain level of lymphocytes  
in patients suffering from AIDS and thus prolonging  
their life (Bouic, P.J.D. AIDS Bulletin, v. 6 #3, pp.  
25 18-20, Sept. 1997), and

- an anti-diabetic and anti-hyperglycaemic  
effect (M.D. Ivorra et al.: Archives of the

International Pharmacodyn, v. 296, pp. 224-231, April 1988) and also an anti-ulcer, anti-inflammatory and anti-pyretic effect (M.B. Gupta et al.: Planta medica (Journal of Medicinal Plant Research) vol. 39, pp. 157-  
5 163, 1980).

By virtue of their composition, the extracts of the invention thus have a broad spectrum of activity and can be used in many fields of application.

Mention will be made in particular of the use  
10 of the extracts of the invention in the food sector. Specifically, these extracts constitute additives with a high added value.

They are suitable, in particular, for supplementation, for example of chocolates, beverages  
15 and dairy products.

Mention will thus be made of the use of the extracts according to the invention as additives in certain foods to make them into veritable health foods (also known as functional foods or pharmafoods) for  
20 which the health allegations are considered to be derived from their known set of biological properties.

The invention is also directed towards protecting nutritional supplements comprising an effective amount of extracts according to the  
25 invention.

In particular, the nutritional supplements according to the invention comprise at least one

extract according to the invention in a proportion of  
from 25 to 300 mg and preferably from 100 to 200 mg.

It is particularly suitable to administer  
them orally, in the form of tablets, wafer capsules and  
5 gel capsules.

The extracts of the invention are also most  
particularly advantageous in the cosmetics sector, in  
which their properties are advantageously exploited to  
form part of the composition of formulations, as active  
10 principles, or in combination with other active  
principles.

Such cosmetic compositions are thus  
characterized in that they comprise an effective  
amount, for a cosmetological application, of the  
15 extracts of the invention, in combination with the  
vehicles conventionally used in cosmetology. These  
extracts will thus be used in the production of creams,  
lotions, mousses, soaps and the like.

The properties of the extracts of the  
20 invention also make them therapeutically highly  
advantageous. As mentioned above, the study of the  
pharmacological properties of their constituents has  
shown their efficacy against various complaints. These  
properties are also accompanied by the great level of  
25 harmlessness of these products, which thus have a  
particularly satisfactory therapeutic index.

The invention is also directed towards the use of the extract according to the invention as a source of choice for obtaining active principles intended for pharmaceutical use.

5 Other characteristics and advantages of the present invention will emerge from the description given with reference to the attached drawings, which illustrate two implementation examples thereof, without any limiting nature. In the drawings:

10 - Figure 1 is a scheme representing the successive steps of the process that is the subject of the invention, and

- Figure 2 is a scheme similar to that of Figure 1 illustrating the variant of the process of the  
15 invention in which merchant beans are used, the seeds of which are re-humidified before undergoing the crushing operations in an extraction and distillation solvent.

Reference is made firstly to Figure 1.

20 According to the invention, the fresh beans, which may or may not have been pretreated, are freed of the pulp and the husk by a depulping/shelling operation, for example using a device of the "parmentière" type. Clean kernels are thus obtained,  
25 which are crushed, for example in a knife mill, in the presence of a solvent. As mentioned above, this solvent is advantageously chosen from the group especially

comprising water, ethanol, acetone, 2-butanol and 2-propanol, in all proportions, as a mixture with water. Preferably, the solvent content is greater than 50% by volume (taking into account the water provided by the  
5 beans).

The crushed kernels/solvent mixture can be left to infuse, hot or cold, for a few hours to several days. If a hot infusion is carried out, excessively high temperatures (that is to say temperatures above  
10 60°C) should be avoided, so as to limit the chemical oxidation and the chemical degradation of the compounds to be extracted.

The mixture is then filtered and rinsed several times with the solvent used.

15 A distillation is then carried out so as to obtain an extract.

This distillation is preferably performed at a temperature from 50 to 60°C so as to avoid a degradation of the polyphenol compounds, under a  
20 residual pressure of 12 to 20 kPa, so as to evaporate off the solvent mixture contained in the filtrate. As indicated in the scheme in Figure 1, the solvent recovered during the filtrate distillation step may be recycled into the kernel crushing step.

25 The variant of the process illustrated by Figure 2 differs from the process described above with reference to Figure 1 solely by the fact that the

process is carried out using merchant cocoa beans, that is to say beans that have undergone a pretreatment including a drying operation, the seeds thus obtained then being subjected to a re-humidification step after  
5 shelling, this step being performed with 30 to 50% warm water, before the step of crushing in the solvent. Such a re-humidification allows the cell walls of the kernels to regain their elasticity and thus not to be broken during the crushing in the presence of the  
10 solvent. The percentage of extracted lipids is higher in this case than with fresh beans that are not re-humidified.

Examples of extracts resulting from the use of the process that is the subject of the invention are  
15 given below.

In these examples, the xanthines represent theobromine and caffeine.

It will be noted that the percentages of polyphenols are expressed as gallic acid equivalents.  
20 according to the Folin Ciocalteu method.

The free-radical-scavenging activity was evaluated according to the DPPH (1,1-diphenyl-2-picryl-hydroxy radical) test. It is necessary to know the molar concentration of the solutions of extracts  
25 subjected to the test. Now, since the nature of all the molecules present is not known, an "estimation" of an average molecular weight (that of catechin) is thus

chosen (arbitrarily) to express this molarity. The results are then expressed by the number of picomoles required to reduce 50% of the DPPH radical forms. As a result, the higher the value, the less free-radical-scavenging the extract.

The percentage of extract/dry (extract expressed on the dry matter) is determined using the following relationship:

$$\% \text{ extract/dry} = \frac{10\,000 * E}{W * (100-H)}$$

in which:

- E denotes the weight of the extract in grammes,
- W denotes the weight of the beans in grammes, and
- H denotes the moisture content of the beans.

This relationship makes it possible to compare the results obtained on beans of different origins. Specifically, the moisture content of a bean is variable according to its origin.

The xanthines were assayed according to the OICCC method No. 107 (1988).

The composition of the fatty substance was determined according to the method of C.C. Young (see "The interpretation of GLC Triglycerides Data for the Determination of Cocoa Butter Equivalents in chocolate.

A new approach." 1984, JAOCS, 61, pp. 576-581).

Exploitation of the results according to Padley allows the composition of the lipid portion (fatty acid, sterols, triglycerides, etc.) of the extract to be  
5 interpreted.

1) Extraction according to the invention:

Variation of the extraction yields as a function of the type of solvent (maceration for 24 hours)

	Cold water	MeOH (70%)	Water at 60°C	Acetone (70%)	2- Prop- anol (70%)	Eth- anol (70%)	2-But- anol (70%)
% extract /dry	8.8	10.6	13.4	12	14.4	11.1	10.1

10

Extract composition (%)

Lipids	0.6	0	8.7	0.1	3.6	3.5	10.4
Xanthines	8.6	6	9.4	5.6	9.9	8.5	16.1
Poly- phenols	17.2	41.2	19.1	61.1	45.5	54.3	37.6

DPPH activity	88.5	36.4	147.6	25.9	39	31.2	41.6
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The extract comprising the lipid fraction that is the most advantageous combined with the best free-radical-scavenging activity (due to the polyphenol fraction) is obtained with the ethanol/water solvent mixture (70/30 by volume).

This solvent is thus preferably chosen.

**2) Comparison on extractions of beans  
originating from the Ivory Coast and from Cameroon**

The comparison is made on the sterol content of the fatty substance contained in the extracts of the invention.

It is recalled that the composition of the fatty substance of the fresh bean varies relatively little from one origin to another. The percentage of sterols in cocoa butter is from 0.14 to 0.16%, whereas the percentage of  $\beta$ -sitosterol is from 0.08 to 0.1%.

In the table below, the extractions are carried out on beans from the Cameroon with 70% ethanol.

	1 hr	2 hrs	4 hrs	16 hrs	2 days
% fatty acids	1.72	1.24	1.10	1.58	2.67
% total sterols	15.59	20.44	24.80	25.16	25.60

% $\beta$ -sitosterol	9.75	12.67	14.63	14.59	14.87
% diglycerides	79.91	75.65	63.12	72.20	68.73
% triglycerides	2.76	2.65	2.11	1.04	2.98

In the table below, the extractions are carried out on beans from the Ivory Coast with 70% ethanol.

5

	1 hr	2 hrs	4 hrs	16 hrs	2 days
% fatty acids	11.79	15.30	14.47	18.02	17.62
% total sterols	19.82	17.68	20.30	20.74	20.97
% $\beta$ -sitosterol	11.54	10.51	11.95	12.18	12.18
% diglycerides	62.03	61.41	59.80	55.42	56.25
% triglycerides	3.86	2.00	1.70	0.99	1.20

It will be noted that the process according to the invention allows the lipid fraction to be

enriched in sterols, and in particular in  $\beta$ -sitosterol, compared with cocoa butter.

3) Comparison of the extraction according to the origin of the cocoa beans (maceration for 24 hours)

Extraction with 70% ethanol.

	Cameroon	Equatorial Guinea	Ivory Coast	Brazil
% extract/dry	11.1	9.5	8.4	12

Extract composition (%)

Lipids	3.5	4.9	9.2	3.4
Xanthines	8.5	8.3	10.4	14.2
Poly-phenols	54.3	40.2	47.6	38.2

DPPH activity	31.2	42	47.9	40.6
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4) Extraction on merchant beans (maceration for 24 hours)

Extraction with 70% ethanol.

	Ivory Coast
% extract/dry	9.4

## Extract composition (%)

Lipids	9.5
Xanthines	10.5
Polyphenols	19

Free-radical- scavenging activity	99
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## 5) Composition in the agrifood sector

Non-limiting examples of the use of extracts according to the invention, obtained by carrying out the process defined above, are indicated below. These extracts may be used as supplements in many food products. The Proprietor tested the addition of extracts obtained with 70% ethanol in chocolate products. In all the examples indicated below, a comparison was made between the product with addition of extracts and a product free of such an addition:

15

## DARK CHOCOLATE

Composition: cocoa paste:	56%
Sugar	26.99%
Cocoa butter	16%
Vanilla	0.01%
Extract of the invention:	1%

Tasting: the panel was composed of 18 people:  
12 of the 18 people preferred the chocolate with added  
extract according to the invention. It was found to be  
5 rounder and more aromatic.

## MILK CHOCOLATE

Composition: cocoa paste:	7.60%
Sugar	41.30%
Cocoa butter	27.50%
Full-fat milk	22.50%
Lecithin	0.59%
Vanillin	0.01%
Extract of the invention	0.50%

10 Tasting: the panel was composed of 15 people.  
Result: slightly pinker colour; no significant  
difference was found as regards the taste of the  
product.

## 15 BEVERAGE PREPARATION FOR AN AUTOMATIC DISPENSER

Sugar composition:	52.69%
Highly defatted cocoa powder	14%
Vanillin	0.01%
Milk (fat-free)	33%

Extract of the invention	0.30%%
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Tasting: the panel was composed of 9 people.  
200 ml of hot water were added to 25 grammes of this  
preparation.

- 5 Result: no significant difference was found between the  
two preparations.

It goes without saying, of course, that the  
present invention is not limited to the various  
implementation examples mentioned above, but instead  
10 encompasses all the variants.

#### 6) Composition in the cosmetic field

Antisun cosmetic preparation for combating  
ageing of the skin and slimming.

A W/O emulsion is prepared by mixing a  
15 sunscreen with the polyphenol extract of cocoa  
according to the invention and excipients for a cream.  
This serum combines antisun properties (due to the  
presence of a sunscreen and the polyphenols of the  
extract according to the invention), anti-wrinkle  
20 properties (due to the presence of the polyphenols of  
the extract according to the invention) and slimming  
properties (due to the presence of the xanthine bases  
of the extract according to the invention).

## Formulation:

Isopropyl methoxycinnamate and ethyl diisopropylcinnamate (Néo Héliopan E 1000®)	3%
Extract of cocoa bean according to the invention	3%
Excipients for W/O serum	qs

## Composition of the excipients:

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- Propylene glycol dicaprylate/dicaprate + stearalkonium hectorite + propylene carbonate (Miglyol 840 gel B®)	20.0%
- Bis-diglyceryl caprylate/caprate/isostearate/ hydroxystearate adipate (Softisan 649®)	5.0%
- Isostearyl diglyceryl succinate (Imwitor 780 K®)	5.0%
- Liquid paraffin	8.0%
- Solid paraffin	3.0%
- Magnesium sulphate	2.0%
- Water	qs 100.0%

## CLAIMS

1. Process for obtaining extracts based on polyphenol compounds contained in cocoa, characterized  
5 in that it comprises:

- the use of fresh beans, that have not been pretreated or defatted, these beans being freed of their pulp and husk, so as to obtain clean kernels,
- the crushing of the said kernels, in the  
10 presence of solvent,
- the maceration of the crushed kernels under conditions allowing the desired compounds to be extracted,
- the filtration of the maceration mixture,
- 15 - the recovery of an extract containing the said compounds from the filtrate.

2. Process according to Claim 1, characterized in that merchant cocoa beans are used, that is to say beans that have undergone a pretreatment  
20 including a drying operation, the seeds of which are re-humidified before crushing, for example with 30 to 50% warm water.

3. Process according to Claim 1 or 2, characterized in that the maceration step is performed  
25 with one or more solvents capable of dissolving the polyphenols and lipids without adversely affecting their properties.



4. Process according to Claim 3,  
characterized in that water or a mixture of water and  
solvent is used, the solvent being chosen from the  
group comprising ethanol, acetone, 2-butanol and 2-  
5 propanol.

5. Process according to Claim 3 or 4,  
characterized in that a solvent/water mixture with a  
solvent content of greater than 50% by volume is used.

6. Process according to any one of Claims 1  
10 to 5, characterized in that the maceration step is  
performed, hot or cold, for 1 hour to several days.

7. Process according to any one of Claims 1  
to 6, characterized in that the extract is recovered by  
distillation of the filtrate obtained, at a temperature  
15 of between 50 and 60°C, under a residual pressure of 12  
to 20 kPa.

8. Extracts based on polyphenol compounds,  
characterized by a content (% by weight relative to the  
total extract) of 15 to 65% polyphenols, 0 to 11%  
20 lipids and 5 to 20% xanthines.

9. Extracts according to Claim 8,  
characterized in that the lipids comprise from 10 to  
30% by weight of phytosterols, preferably with 7 to 15%  
 $\beta$ -sitosterol.

25 10. Use of the extracts according to Claim 8  
or 9, in the food sector, as additives, especially for  
supplementing chocolates, beverages and dairy products.

11. Use of the extracts according to Claim 8 or 9, in the food sector, for the manufacture of functional foods.

12. Nutritional supplements, characterized in that they comprise an effective amount of extracts according to Claim 8 or 9.

13. Nutritional supplements according to Claim 12, characterized in that they comprise at least one extract according to Claim 8 or 9, in a proportion of from 25 to 300 mg and preferably from 100 to 200 mg.

14. Nutritional supplements according to Claim 12 or 13, characterized in that they may be administered orally, in particular in the form of tablets, wafer capsules or gel capsules.

15. Use of the extracts according to Claim 8 or 9, in the cosmetics field, as active principles or in combination with other active principles.

16. Cosmetic compositions, characterized in that they comprise an effective amount, for a cosmetological application, of the extracts according to Claim 8 or 9, in combination with the vehicles conventionally used in cosmetology.

17. Cosmetic compositions according to Claim 16, characterized in that they are in the form of creams, lotions, foams or soaps.

18. Use of the extract according to Claim 8 or 9, as a source or for obtaining active principles in the pharmaceutical field.

Fig. 1

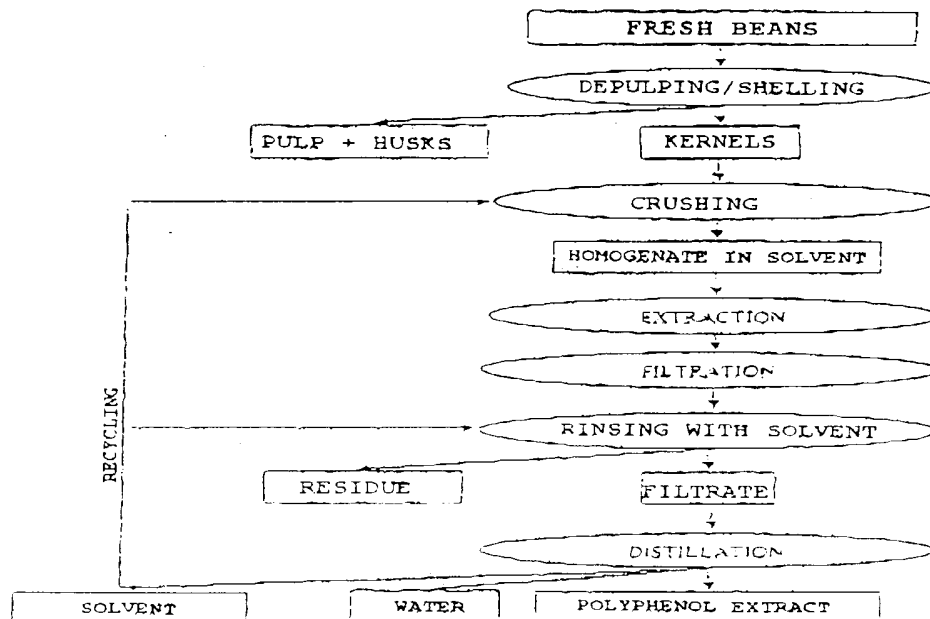


Fig. 2

